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THE

Academy of Natural Sciences

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PHILADELPHIA

ANNUAL REPORTS

1917

REPORT OF THE RECORDING SECRETARY.

The Recording Secretary respectfully reports that late in September, he was disabled by an affection of the right side which has reduced him to a passive administration of the affairs of his offices of Recording Secretary and Librarian, the active duties of the position being performed by the Assistant Librarian, William J. Fox.

The Secretary, in the hope of being able to resume the duties of his offices with the opening of the New Year, has been sustained by the sympathy of the President and the other administrators of the Academy, to whom, and to other friends, he returns his sincere thanks.

The following report, and that of the Librarian, have been prepared by Mr. Fox, whose efficiency is cordially recognized by the Secretary and Librarian.

Acknowledgment is also made to Dr. J. Percy Moore and Dr. Philip P. Calvert for services at the meetings of the Academy and Council.

Meetings were held on December 16, 1916, January 16, February 20, March 20, April 17, June 12, and November 20, 1917. Communications were made by William E. Hughes, Mrs. Arthur R. Iliff, John G. Rothermel, Philip P. Calvert, and William Alanson Bryan.

Twenty-three papers have been presented for publication as follows: E. Caziot (translated by William H. Dall), 1; Henry W. Fowler and Emmett Reid Dunn, 1; Henry A. Pilsbry and Amos P. Brown, 1; Junius Henderson and L. E. Daniels, 1; Henry A. Pilsbry, 4; E. G. Vanatta, 1; Harold Heath, 1; Henry A. Pilsbry and J. H. Ferriss, 1; Henry W. Fowler, 2; Henry A. Pilsbry and Charles W. Johnson, 1; Henry L. Viereck, 1; Witmer Stone, 1; Morgan Hebard, 2; David Starr Jordan, 2; E. W. Gudger, 1; Bruce Wade, 1; Carl L. Hubbs, 1.

Seventeen of these papers have been published (and one is in course of publication) in the *PROCEEDINGS*, one has been accepted for publication in the *JOURNAL*, two have been referred to other sources of publication, and two have been returned to the authors.

Six hundred and thirty-two pages of the *PROCEEDINGS*, with thirty-six plates, have been issued.

The American Entomological Society (the Entomological Section of the Academy) has published four hundred and eighty-nine pages,

with thirty-four plates, of its TRANSACTIONS; two hundred and eighty-four pages, with ten plates, of MEMOIRS; and five hundred and seven pages, with thirty-one plates, of the ENTOMOLOGICAL NEWS.

One hundred and forty-three pages, with twenty plates, have been issued of the MANUAL OF CONCHOLOGY.

The total number of pages is two thousand and fifty-five, and 131 plates, being an increase of 130 pages and twenty-two plates over last year.

One hundred and two members and one correspondent have been elected. Fourteen deaths have been announced. Resignations have been received from Warren M. Foote, Theodore Brooks, and Walter Sonneberg. Five were dropped from the roll.

The increase in new members is due to the activities of the Committee on Membership and Endowment. The financial results of the campaign of this committee will, no doubt, be referred to in the Treasurer's report.

The special appointments of the Council are as follows: The Standing Committees, the Councillor, the Curator of the William S. Vaux Collections, and the Custodian of the Lea Collections. In addition, there were appointed a Committee of Council on By-Laws, and a Committee on Correspondents.

The Hayden Memorial Geological Award, a gold medal, for the best work of a geologist or a paleontologist, was conferred on Professor William Morris Davis, of Harvard University.

A meeting of the American Society of Ichthyologists and Herpetologists was held in the lecture hall in March.

The Ludwick Institute Free Lecture Courses were given at the Academy on Mondays and Fridays, January 8 to April 23, by Witmer Stone, B. Franklin Royer, Henry Skinner, Spencer Trotter, and Henry A. Pilsbry. Ten lectures on the natural history of Philadelphia and vicinity, especially adapted to school children, were given by Messrs. Stone, Moore, Pilsbry, and Skinner, of the Academy staff.

EDWARD J. NOLAN, *Recording Secretary.*

REPORT OF THE CORRESPONDING SECRETARY.

The volume of incoming correspondence, which is somewhat of an index of scientific activity abroad, fell during the past year to a point where it was barely one-third of the receipts of the years immediately preceding the war.

William Morris Davis, the recipient of the last Hayden Medal, was elected a correspondent and Émile Henri Sauvage and William Bullock Clark, correspondents, died.

No international scientific congresses were held and no invitations whatever to participate in important scientific activities were received by the Corresponding Secretary.

Thanks were received from the University of Pennsylvania Chapter of the Society of the Sigma Xi and the American Society of Ichthyologists and Herpetologists for courtesies received in connection with their meetings held in the Academy's building.

Considerable scientific information was furnished to inquiring correspondents.

Statistics of the correspondence follow:

Communications received:

Acknowledging the receipt of the Academy's publications.....	149
Transmitting publications to the Academy.....	24
Requesting exchanges or the supply of deficiencies.....	2
Invitations to learned gatherings, celebrations, etc.....	0
Notices of deaths of scientific men.....	1
Circulars concerning the administration of scientific and educational institutions, etc.....	13
Photographs and biographies of correspondents.....	4
Letters from correspondents.....	6
Miscellaneous letters.....	58
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Total received.....	257

Communications forwarded:

Acknowledging gifts to the library.....	1069
Requesting the supply of deficiencies.....	147
Acknowledging gifts to the museum.....	123
Acknowledging photographs and biographies.....	2
Letters of sympathy or congratulation, addresses, etc.....	1
Diplomas and notices of election of correspondents and delegates' credentials.....	1
Miscellaneous letters.....	107
Annual reports and circulars sent to correspondents.....	180
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Total forwarded.....	1,630

Respectfully submitted,

J. PERCY MOORE, *Corresponding Secretary.*

REPORT OF THE LIBRARIAN.

The Librarian has stated in the report of the Recording Secretary that he has been compelled by a disabling affection since last September to depend on the Assistant Librarian, William J. Fox, for the performance of the duties of both offices, a service which he has

performed with efficiency and accuracy. The statistics which follow have been prepared by Mr. Fox. It is hoped the Librarian will be able to resume his services in the Academy at the beginning of the year.

Total additions, 5,902. 569 were volumes, 5,185 were pamphlets and parts of periodicals, and 147 were maps, and 1 sheet.

They were received from the following sources:

Exchanges	2,541	War Department	5
Isaiah V. Williamson Fund	1,190	Edward J. Nolan	5
Estate of Benjamin Sharp	750	American Iron and Steel Institute	5
United States Department of Agriculture	581	Lowell Observatory	5
General Appropriation for purchase of books	97	Publication Committee of the Academy	5
Authors	78	Nela Research Laboratory	5
American Entomological Society	73	Samuel G. Gordon	5
Editors	71	Mrs. Samuel R. Shipley	5
United States Bureau of Education	65	University of Michigan	5
Library of Congress	43	Queensland Department of Mines	4
Illinois State Geological Survey	43	Commissioners of Fisheries and Game, Mass.	4
James Aitken Meigs Fund	25	Scripps Institute for Biological Research	4
Imperial Department of Agriculture of the British West Indies	25	Imperial Geological Survey of Japan	4
Pennsylvania Department of Agriculture	24	Clarence B. Moore	4
Thomas B. Wilson Fund	22	New Jersey Department of Conservation and Development	3
Secretaria de Fomento, Mexico	22	Indiana University	3
Oklahoma Geological Survey	22	Danish Government	3
New York Agricultural Experiment Station	18	Colorado Museum of Natural History	3
Dr. Henry Skinner	14	Commission of Conservation, Canada	3
Pennsylvania Department of Health	14	Michigan Geological and Biological Survey	3
Scientific Society of San Antonio	12	Henry A. Pilsbry	3
California State Commission of Horticulture	12	California Fish and Game Commission	3
Illinois State Geological Survey	12	University of Tennessee	3
Pan-American Union	10	Bermuda Biological Station for Research	3
Frank J. Keeley	9	San Diego Society of Natural History	2
Pennsylvania State Library	9	Cuerpo de Engenieros de Minas del Peru	2
Vermont Agricultural Experiment Station	9	Geological Survey of Alabama	2
Trustees of the British Museum	9	Wistar Institute of Anatomy and Biology	2
Comissão de Linhas Telegráficas Estratégicas de Matto Grosso ao Amazonas	8	Henry Tucker	2
David Jayne Bullock	7	Department of Trade and Customs, Australia	2
United States Department of the Interior	7	Delaware Valley Ornithological Club	2
United Department of Commerce and Labor	6	Argentine Government	2
Nova Scotia Department of Agriculture	6	William J. Fox	2
University of Wyoming			
George Vaux, Jr.			

South Dakota State College of Agriculture.....	2	Zoological Society of Philadelphia.....	1
Department of Marine and Fisheries, Ottawa.....	1	Charles M. Burns.....	1
Washington Academy of Sciences.....	1	Coleman Sellers, Jr.....	1
Iowa Geological Survey.....	1	Witmer Stone.....	1
Pennsylvania Water Supply Commission	1	Government of India.....	1
The Southwest Museum.....	1	Government of Formosa.....	1
Department of Fisheries of Bengal, etc.....	1	Justus Perthes' Geographische Anstalt.....	1
Mississippi State Geological Survey.....	1	Geological Survey of Georgia.....	1
Boston City Hospital.....	1	Westwood Astrophysical Observatory.....	1
Observatorio de Madrid.....	1	North Carolina Geological and Economic Survey.....	1
Western Reserve University.....	1	Warren Academy of Sciences.....	1
Henry Fairfield Osborn.....	1	Board of Water Supply, New York City.....	1
George M. Greene.....	1	Game Commissioners of Pennsylvania.....	1
Pennsylvania Department of Forestry.....	1	Charles W. Richmond.....	1
United States Brewers' Association.....	1	Thornwall Museum.....	1
Delaware County Institute of Science.....	1	Carl Hering.....	1
		Estacion Sismologica de Cartuja	1

These additions have been distributed to the various departments of the library as follows:

Journals.....	3,434	Physical Sciences.....	34
Agriculture.....	768	Ichthyology.....	32
Geology.....	409	Mammalogy.....	23
Entomology.....	252	Medicine.....	19
Anatomy and Physiology.....	203	Voyages and Travels.....	19
General Natural History.....	134	Mathematics.....	14
Geography.....	130	Chemistry.....	13
Botany.....	82	Herpetology.....	11
Helminthology.....	75	Mineralogy.....	9
Conchology.....	71	Bibliography.....	5
Anthropology.....	63	Philology.....	1
Ornithology.....	38	Miscellaneous.....	63

Some of the more important works received are:

Mededeelingen van de Rijksopsporing van Delfstoffen. Holland.
 Thorburn, A. British Birds. 4 vols.
 Bateman, J. The Orchidaceae of Mexico and Guatemala. Folio. 1843.
 Aristotle. Totius Naturalis Philosophiae in Physicam Aristotelis Epitome, etc. Hieronymo Vuildenbergio Auriomontano autore. 1544.
 Rafinesque, C. S. Analyse de la Nature. 1815.
 Reichenbach, H. G. L. Zoologie oder Naturgeschichte des Thierreichs. 2 vols. in one. Dresden, etc. 1828-36.
 Palaeontographica Americana.

The following journals are new to the collection:

Abstracts of Bacteriology. Baltimore.
 Annales du Service des Epiphyties.
 Association of American Geographers. Annals.
 Bermuda Biological Station for Research, Contributions. Cambridge
 British Mycological Society, Transactions.
 Bulletin Biologique de la France et de la Belgique. Paris.

Department of Agriculture, Ceylon. Leaflet.
Dublin Quarterly Journal of Science.
Entomological Society of Nova Scotia, Proceedings.
Genetics. Princeton.
Institut Colonial de Marseille, Bulletin.
Junta de Ciencias Naturals, Barcelona. Series Biologico-Oceanografica; Series Botanica; Series Zoologica.
Magasin Encyclopédique. 122 vols. 1795-1816.
Nova Scotia Department of Agriculture, Bulletin.
Osborn Botanical Laboratory, Yale University, Contributions.
Midland Naturalist (London). 16 vols. 1878-1893.
Rivista Italiana di Speleologia. Bologna.
Royal Society of Western Australia, Journal and Proceedings.
Revue Zoologique Russe. Moscow.
Scientific Society of San Antonio, Bulletin.
Secretaria de Fomento, etc. Mexico, Boletin Oficial.
Sutton and Sons, Bulletin. Reading, England.
University of Michigan Museum of Zoology, Miscellaneous Publications.
Westwood Astrophysical Observatory, Occasional Scientific Papers.

Sixty-five works in seventy-one volumes have been loaned. 1146 works in 1678 volumes have been used by the attachees in connection with their studies.

Five hundred and seventy-three volumes have been bound.

Mr. Furman S. Wilde, Assistant in the Library, has been serving in the National Army since November 3, 1917.

Miss H. N. Wardle has kindly rendered efficient aid as caretaker of the Library during the Assistant Librarian's absence.

EDWARD J. NOLAN, *Librarian.*

REPORT OF THE CURATORS.

The Curators, at the close of the present year, are able to report the collections and buildings in their care, in excellent condition. The museum staff has been constantly employed in the study, arrangement, and display of the collections in the various departments as described in detail below.

Most of this work has consisted in carrying out the arrangement of material in the new study and exhibition cases, as outlined in last year's report, but much new material has also been cared for.

At the session of the State Legislature, which closed early in the past summer, an appropriation of \$15,000 was made for the needs of the Academy. From this fund it was possible to paint the entire outside wood and iron work of the building, which was much in need of attention. Plans have been prepared for necessary alterations in the heating plant, which will be carried out at once. The consideration of other improvements made possible by this appropria-

tion has been temporarily postponed owing to the illness of the President and Executive Curator, Dr. Samuel G. Dixon.

The attendance of visitors, both the general public and the classes of school children from the city and nearby towns, has been large, and the educational importance of the museum is constantly increasing.

In field work, Mr. Clarence B. Moore has continued his explorations among the Indian mounds of the Southern States. Mr. J. A. G. Rehn, through the liberality of Mr. Morgan Hebard, was enabled to join him on an entomological trip of several weeks in central Florida and northern Georgia, the Academy sharing in the material collected. Dr. Stone received leave of absence for several weeks during the spring and summer, and collected considerable botanical and entomological material for the Academy in central South Carolina and southern New Jersey, and local field work was carried on by various members of the staff. While the Academy sent out no expeditions during the year, several valuable collections of mollusks, birds, fishes and insects were obtained by purchase.

Details of work in the several departments follow:

MAMMALS.

Many osteological preparations have been made by the taxidermist from material received from the Zoological Society of Philadelphia, which are ready to be placed in the study series, and a number of specimens from the same source, as well as two sea lions from the Philadelphia Aquarium, have been prepared as skins. Material has been loaned to Dr. J. A. Allen.

BIRDS.

By removing a number of duplicates from the general exhibition collection of birds, space was secured for the display of a large part of the groups of North American birds recently received from Mr. Geo. B. Benners, an exhibit which has attracted much attention. During the spring the services of Miss Emma P. Merrick were secured as an aid in the ornithological department, and with her help, Dr. Stone was enabled to make a great advance in the arrangement of the study series of birds.

The entire series of hummingbirds were examined and many of the specimens made over, while all were identified and relabeled. The Jewel collection and the Rhoads Guatemala collections were

also identified and relabeled, and together with the Carriker collection of Colombian birds, were distributed through the study series, and 1,173 specimens were catalogued.

The entire collection of birds eggs has been carefully cleansed and all the North American specimens placed in uniform glass-covered boxes secured for the purpose. In these they are absolutely protected and present a very handsome appearance.

Several important accessions have been received, notably the collection of bird skins of the late Samuel Wright, presented by Mrs. Wright; the Charles J. Pennock collection of eggs and skins, presented by Mrs. Pennock; and collections of Colombian birds and of Hummingbirds obtained by purchase. A number of visiting ornithologists have made use of the collections during the year and specimens have been loaned to J. E. Law, and W. E. Clyde Todd.

REPTILES AND BATRACHIANS.

Mr. Henry W. Fowler has had charge of this department and has looked after the welfare of the specimens along with those of the ichthyological department. 200 specimens have been catalogued, representing part of the material received during the year. A number of West Indian reptiles have been loaned to Dr. Thomas Barbour, of the Museum of Comparative Zoology, who is studying them critically and redetermining them while a series of African reptiles has been borrowed by the American Museum of Natural History. Mr. G. K. Noble visited the Museum in the summer and made use of the collections while Mr. E. R. Dunn has studied certain of the Salamanders and in conjunction with Mr. Fowler, has prepared a paper upon them.

During the summer Dr. Stone and the Taxidermist, Mr. McCadden, made experiments in preparing casts of local reptiles for exhibition and material was obtained for several groups of turtles and toads. Specimens were loaned to Dr. Thos. Barbour, G. K. Noble, Mary C. Dickerson and Karl P. Schmidt.

FISHES.

Mr. Fowler reports large accessions to the ichthyological collections, of which 1,134 have been catalogued. He has identified a collection of Philippine fishes for the Philadelphia Commercial Museum, in return for which the Academy has received a valuable series of specimens, while in the same way he has secured from the Museum of Comparative Zoology, a series of cyprinoid fishes from

India. The Academy is again especially indebted to Messrs. E. S. and W. I. Mattern, who have presented collections of local fishes from various parts of Pennsylvania and New Jersey, aggregating 5,000 specimens. On March 8, the second meeting of the American Society of Ichthyologists and Herpetologists was held at the Academy, which brought together specialists in these fields from various parts of the country and proved in every way most successful.

Three papers dealing with the collections were published by Mr. Fowler during the year. Specimens were loaned to Dr. C. H. Eigenmann.

MOLLUSKS.

Dr. Henry A. Pilsbry, Special Curator of Mollusks, states that specimens have been received from 82 persons and institutions since the last report. Among other valuable gifts were large accessions to the collection of Hawaiian Mollusca, received from Mr. D. Thaanum, of Hilo, Hawaii, and from Prof. and Mrs. W. A. Bryan, of Honolulu, who spent several months at the Academy studying the collections. Also the important Rocky Mountain and California material from Prof. Junius Henderson and Mr. Jas. H. Ferriss.

New cases installed last year have permitted the expansion and rearrangement of the whole study series of shells, which is now in excellent order.

Dr. Pilsbry has completed the first volume of the "Monograph of the Pupillidae," begun last year, the final number being now in press. He has also published three papers on the anatomy of West American snails, and in collaboration with Mr. Ferriss, a study of the mollusks of the Black Range, New Mexico. Also papers on Hawaiian marine shells.

Mr. Vanatta has been occupied with labeling and arranging accessions to the collection and in determining specimens for correspondents. Miss Ziegler has made good progress in the long task of cataloguing the collection of shells.

The collection has been extensively used by visiting naturalists. Specimens have been loaned to Dr. Paul Bartsch, Prof. A. E. Verrill and E. P. Chase.

INSECTS.

In the department of Entomology, Dr. Henry Skinner reports that during the year, two thousand three hundred and eighty-six insects have been received, and the greater part of them has been relaxed, mounted and placed in the cabinets.

The usual care has been devoted to the preservation of the collections and a considerable amount of rearrangement in the new metal cases carried into effect. In the Coleoptera the family Cerambycidae has been rearranged in its entirety. The Silphidae, Scydmaenidae and Pselaphidae have also been rearranged.

In the Lepidoptera the genus *Argynnis* has been rearranged, and many additional specimens added. Some work has also been done on the exotic species. Mr. R. C. Williams, Jr., arranged the Lycaenidae according to his studies of the genitalia of the family.

In the Diptera, Mr. E. T. Cresson, Jr., has continued his systematic studies of the family Ephydridæ, and has also determined and rearranged the Sciomyzidæ and Sarcophagidæ.

In the Orthoptera, Mr. J. A. G. Rehn has continued the rearrangement of the specimens in the new type of large glass-covered boxes, and the work has been nearly completed. Numerous small collections have been mounted, labeled, and stored. A report on extensive Brazilian collections has been completed, as well as a study of the genus *Mermiria* both of which will be published as soon as the illustrations are completed. Numerous specimens have been determined for correspondents.

Mr. Morgan Hebard has spent most of his time at the Museum during the year and in the course of his studies on his various collections, has presented much valuable material to the Academy. His expedition to Florida and Georgia, already referred to, was productive of collections of much importance. Many visiting entomologists have studied the collections of insects during the year and specimens have been loaned to Jas. S. Hine, G. C. Crampton and W. T. Davis.

VERTEBRATE FOSSILS.

The collections of vertebrate fossils have been removed to the new series of cases provided for them last year. The main collections are arranged in trays in the storage closets under the cases, while a representative series has been selected from them for exhibition. The mammals and birds have been arranged by Mr. Rehn, the reptiles and fishes by Mr. Fowler. Mr. Rehn has also compiled extensive data from which comprehensive labels will be prepared, describing the exhibition for the benefit of the public.

INVERTEBRATE FOSSILS.

Accessions to this department have not been large during the past year. Dr. Pilsbry and the late Prof. Amos P. Brown have published

a paper describing a small, but valuable lot of fossils from Colombia, given by Mr. Lloyd B. Smith. A preliminary report on Santo Domingo fossils by Dr. Pilsbry and Mr. C. W. Johnson, has also been published.

HERBARIUM.

Mr. Stewardson Brown, who has been able to again take active control of the herbarium, spending every other day at the Museum, reports much progress in the work in this department.

During the year Miss Ada Allen has mounted 3,388 sheets of plants, which have been catalogued and distributed in the general herbarium by Mr. Brown, while Mr. S. S. Van Pelt, who has continued his voluntary services during the year, has mounted 2,400 sheets for the local herbarium.

Mr. Brown has studied and identified the collections made in California by Dr. Witmer Stone, and in New Mexico by Dr. Henry A. Pilsbry during 1915, and has also prepared for distribution to the New York Botanical Garden, St. Louis Botanical Garden, Gray Herbarium and U. S. National Herbarium, 1,723 duplicate specimens, in return for valuable accessions received from these institutions.

Mr. Van Pelt has rearranged nearly the entire Porter collection, placing the specimens in systematic order so that they are readily accessible, while he and Mr. Bayard Long have critically studied certain families and separated out the local material, much of which has been mounted. Mr. Long has continued his voluntary care of the local herbarium.

Dr. J. C. Arthur and Mr. C. L. Shear spent a week in the study of the deSchweinitz cryptogamic herbarium and rearranged much of it, giving the Academy the benefit of their expert knowledge of these obscure plants.

Specimens have been loaned to Prof. M. L. Fernald, W. W. Eggleston, Francis J. Pennell, C. V. Piper, Mrs. Agnes Chase and Prof. A. S. Hitchcock.

MINERALS AND ROCKS.

Mr. Samuel G. Gordon, a student on the Jessup Fund, has continued to render excellent service in caring for the collections of minerals and rocks. During the year he has thoroughly cleansed and relabeled the collection of minerals deposited by the Franklin Institute and arranged them in the new cases in the mineral hall, part of them being placed on exhibition and the others in the study

collection. A number of small collections aggregating 6,000 specimens which have been stored in the basement were critically examined, specimens of value placed in the general series and the others packed away for disposal as duplicates.

On several field trips to northern New Jersey, Virginia, etc., Mr. Gordon secured a number of valuable rocks and minerals for the collection.

The arrangement of the William S. Vaux collection has been completed, and Mr. George M. Greene was employed to prepare new labels for the entire collection. This work was completed early in the year. Further labeling of groups, etc., has been done by Mr. Gordon.

ARCHÆOLOGY.

Mr. Moore's field expedition during the first three months of 1916, made a re-investigation of aboriginal sites along the lower Mississippi River and in northwest Florida and Southern Alabama. The autumn expedition was devoted to the region of northwest Florida and southwest Georgia. The results of both expeditions being largely pottery, regarded as duplicate, proved the thoroughness of his earlier investigations. The collections of archæological material in the museum have been partly rearranged during the year, by Miss H. N. Wardle, who has continued to care for the department and many specimens have been identified for visitors and correspondents.

A number of local collectors have consulted the collections during the year.

WITMER STONE, *Chairman.*

SAMUEL G. DIXON,

HENRY A. PILSBRY,

HENRY TUCKER.

REPORT OF THE CURATOR OF THE WILLIAM S. VAUX COLLECTION.

Completion of re-labeling, during the early months of the year, has brought the William S. Vaux Collection into satisfactory condition.

Accessions during the year include ten specimens of meteorites and fifteen of minerals, acquired by purchase, and the following gifts:

Thaumasite, Paterson, N. J., and Cacoxenite, Hellertown, Pa., presented by Samuel G. Gordon; Stevensite, Paterson, N. J., and

Pectolite, Great Notch, N. J., presented by John Holzman; Babingtonite, Paterson, N. J., presented by R. A. Merceer; Beraunite, Hellertown, Pa., presented by Fred. Oldach; and Rutile, Rowlandsville, Philadelphia, presented by Harry A. Warford.

Samuel G. Gordon has continued to give valuable assistance in caring for the collection.

Respectfully submitted,

F. J. KEELEY, *Curator Wm. S. Vaux Collection.*

REPORTS OF THE SECTIONS.

THE BIOLOGICAL AND MICROSCOPICAL SECTION.—The Biological and Microscopical Section held eight meetings during the year. The attendance and membership have increased.

The Conservator reports the gift of a Hartnack microscope and more than eight hundred slides of Invertebrata from the estate of the late Dr. Benjamin Sharp. Some work has been done in the arrangement of the general collection of slides.

Numerous communications have been made by members including Messrs. T. C. Palmer, Hugo Bilgram, W. H. Van Sickel, Dr. Thomas S. Stewart, F. J. Keeley, J. G. Rothermel, S. L. Schumo, B. F. Ray, and C. S. Boyer.

The following officers were elected for the year 1918:

<i>Director</i>	J. Cheston Morris, M.D.
<i>Vice-Director</i>	T. Chalkley Palmer.
<i>Treasurer</i>	Thomas S. Stewart, M.D.
<i>Conservator</i>	F. J. Keeley.
<i>Recorder and Cor. Sec.</i>	Charles S. Boyer.

CHARLES S. BOYER, *Recorder.*

ENTOMOLOGICAL SECTION.—Six stated meetings were held during the year, with an average attendance of ten persons. Interesting communications were made by: Morgan Hebard, Philip P. Calvert, Henry Skinner, James A. G. Rehn, Philip Laurent, Roswell C. Williams, Jr., Ernest Baylis and Henry W. Fowler were elected contributors, and Charles W. Frost was elected a member. The death of W. D. Kearnott, a contributor, was announced. The purchase was made of a Bausch & Lomb Combined Balopticon, suitable for the projection of lantern slides and opaque objects.

The following officers and committee were elected to serve for 1918:

<i>Director</i>	Philip Laurent.
<i>Vice-Director</i>	R. C. Williams, Jr.
<i>Treasurer</i>	E. T. Cresson.
<i>Conservator</i>	Henry Skinner.
<i>Secretary</i>	J. A. G. Rehn.
<i>Recorder</i>	E. T. Cresson, Jr.
<i>Publication Committee</i>	E. T. Cresson, Philip P. Calvert, E. T. Cresson, Jr.

E. T. CRESSON, JR., *Recorder*.

BOTANICAL SECTION.—At the annual meeting of the Botanical Section, held November 19, 1917, officers for the ensuing year were elected as follows:

<i>Director</i>	Dr. Ida A. Keller.
<i>Vice-Director</i>	Joseph Crawford.
<i>Recorder</i>	Dr. John W. Eckfeldt.
<i>Conservator and Treasurer</i>	Stewardson Brown.

STEWARDSON BROWN, *Conservator*.

MINERALOGICAL AND GEOLOGICAL SECTION.—The Section held three meetings with the usual interested attendance. Prof. Florence Basecom discussed the Geology of Mt. Desert. Miss Emma Walter called attention to remarkable erosion of limestone near Devault. There was also discussion of isostasy and the Himalayas, and other subjects.

There were four field excursions, with an average attendance of about seventeen. The parties visited: 1. The crystalline rocks near Unionville and Northbrook, Chester County; 2. The crystalline rocks near Rocky Run and Dismal Run, Delaware County; 3. The Cambrian quartzites and the limestones between Westtown and Brinton's Bridge, Chester County; 4. The limestone exposures between Devault and Malvern, Chester County.

The following were elected officers of the Section for 1918:

<i>Director</i>	Benjamin Smith Lyman.
<i>Vice-Director</i>	F. J. Keeley.
<i>Recorder and Secretary</i>	W. B. Davis
<i>Treasurer</i>	W. B. Davis.
<i>Conservator</i>	F. J. Keeley.

BENJAMIN SMITH LYMAN, *Director*.

ORNITHOLOGICAL SECTION.—The Section has been active in promoting Ornithological research at the Academy during the year. The Delaware Valley Ornithological Club and the Pennsylvania Audubon Society have continued to hold their meetings in the building and many valuable specimens have been received through the coöperation of these organizations.

The details of work in the Ornithological department will be found in the report of the Curators.

At the annual meeting the following officers were elected for the year 1918:

<i>Director</i>	Spencer Trotter, M.D.
<i>Vice-Director</i>	George Spencer Morris.
<i>Recorder</i>	Stewardson Brown.
<i>Secretary</i>	William A. Shryock.
<i>Treasurer and Conservator</i>	Witmer Stone.

WITMER STONE, *Conservator.*

The annual election of Officers, Councillors, and members of the Committee on Accounts, was held December 18, 1917, with the following result:

PRESIDENT	Samuel G. Dixon, M.D., LL.D., Sc.D.
VICE-PRESIDENTS	Edwin G. Conklin, Ph.D., Sc.D. John Cadwalader, A.M.
RECORDING SECRETARY	Edward J. Nolan, M.D., Sc.D.
CORRESPONDING SECRETARY	J. Percy Moore, Ph.D.
TREASURER	George Vaux, Jr.
LIBRARIAN	Edward J. Nolan, M.D., Sc.D.
CURATORS	Samuel G. Dixon, M.D., LL.D., Sc.D. Henry A. Pilsbry, Sc.D., Witmer Stone, A.M., Sc.D., Henry Tucker, M.D.

**COUNCILLORS TO SERVE
THREE YEARS**

Charles B. Penrose, M.D.,
Charles Morris,
Spener Trotter, M.D.,
William E. Hughes, M.D.

**COUNCILLOR TO SERVE UN-
EXPIRED TERM**

T. Chalkley Palmer.

COMMITTEE ON ACCOUNTS

Charles Morris,
Samuel N. Rhoads,
John G. Rothermel,
Thomas S. Stewart, M. D.,
Walter Horstmann.

COUNCIL FOR 1918.

Ex-Officio.—Samuel G. Dixon, M.D., LL.D., Sc.D., Edwin G. Conklin, Ph.D., Sc.D., John Cadwalader, A.M., Edward J. Nolan, M.D., Sc.D., J. Percy Moore, Ph.D., George Vaux, Jr., Henry A. Pilsbry, Sc.D., Witmer Stone, A.M., Sc.D., Henry Tucker, M.D.

To serve three years.—Charles B. Penrose, M.D., LL.D., Ph.D., Charles Morris, Spencer Trotter, M.D., William E. Hughes, M.D.

To serve two years.—Edwin S. Dixon, Henry Skinner, M.D., Sc.D., Robert G. LeConte, M.D., George Spencer Morris.

To serve one year.—Philip P. Calvert, Ph.D., Frank J. Keeley, Walter Horstmann, T. Chalkley Palmer.

COUNCILLOR.....	George Vaux, Jr.
CURATOR OF MOLLUSCA	Henry A. Pilsbry, Sc.D.
CURATOR OF WILLIAM S. VAUX COLLECTION.....	Frank J. Keeley.
LECTIONS.....	Joseph Willcox.
CUSTODIAN OF ISAAC LEA COLLECTION	William J. Fox.
ASSISTANT LIBRARIAN	Henry Skinner, M.D., Sc.D.,
ASSISTANTS TO CURATORS	Stewardson Brown,
	Edward G. Vanatta,
	Henry W. Fowler,
	James A. G. Rehn,
	Ezra T. Cresson, Jr.
ASSISTANT IN LIBRARY	Furman Sheppard Wilde.
AID IN ARCHAEOLOGY.....	Harriet Newell Wardle.
AID IN HERBARIUM.....	Ada Allen.
Taxidermist	David McCadden.
Janitors	Charles Clappier,
	Daniel Hechler,
	James Tague,
	Jacob Aebly,
	Adam E. Hechler.

STANDING COMMITTEES, 1918.

FINANCE.—Effingham B. Morris, John Cadwalader, A.M., Edwin S. Dixon, Walter Horstmann, and the Treasurer.

PUBLICATION.—Henry Skinner, M.D., Sc.D., Witmer Stone, A.M., Sc.D., Henry A. Pilsbry, Sc.D., William J. Fox, Edward J. Nolan, M.D., Sc.D.

LIBRARY.—Henry Tucker, M.D., George Vaux, Jr., Frank J. Keeley, Witmer Stone, A.M., Sc.D., Spencer Trotter, M.D.

INSTRUCTION AND LECTURES.—Henry Skinner, M.D., Sc.D., Henry A. Pilsbry, Sc.D., Charles Morris, James A. G. Rehn, George S. Morris.

ELECTIONS IN 1917.

The names of the members elected during 1917 will be found on pages 1, 31, 82, 149, 206, 339 and 340.

ADDITIONS TO THE MUSEUM.

1917.

MAMMALS.

BERNICE PAUAHI BISHOP MUSEUM (for determination). Paratype of *Mus hawaiiensis* Stone, Hawaiian Islands.

H. W. FOWLER. Skull of Dolphin (*Delphinus delphis*), Riverton, New Jersey.

W. J. FOX. Skull of Dolphin (*Delphinus delphis*), Sea Isle City, New Jersey.

DAVID McCADDEN. Skeleton of Muskrat (*Ondatra zibethica*), Pennsylvania.

SAMUEL MASON. Five Rice Rats (*Oryzomys palustris*), Odessa, Delaware.

PENNSYLVANIA GAME COMMISSION. Skin of Mink (*Mustela vison lutreoccephala*), Pennsylvania.

PHILADELPHIA AQUARIUM. Three Sea Lions (*Zalophus californianus*), Skins and skulls.

PURCHASED. Weasel (*Putorius novaboracensis*) in winter pelage, Westtown, Pennsylvania.

ARCHICLAUS P. WILLETS. Three House Mice (*Mus musculus*), New Jersey.

ZOOLOGICAL SOCIETY OF PHILADELPHIA. Specimens prepared as follows: Mounted: Chimpanzee (*Pan satyrus*), Hainan Gibbon (*Hylobates nasutus*). Skins and Skulls: White-crowned Monkey (*Lasiopyga petronella*), Brown Macaque (*Pitheccus speciosus*), Black-handed Spider Monkey (*Ateles geoffroyi*), Yaguarundi Cat (*Felis yagouaroundi*), Raccoon-like Dog (*Canis procyonoides*), Philippine Deer (*Rusa alfredi*), Cape Hyrax (*Procavia capensis*), Patagonian Cavy (*Dolichotis patagonicus*), Great Anteater (*Myrmecophaga tridactyla*), Lund's Opossum (*Didelphys albiventeris*), Opossum (*Didelphys* sp.). Skeletons: Black Rhinoceros (*Diceros bicornis*), South African Giraffe (*Giraffa camelopardalis capensis*), Eland (*Taurotragus oryx*). Skulls: Moustached Monkey (*Lasiopyga cephush*), Anubis Baboon (*Papio anubis*).

BIRDS.

GEORGE W. BASSETT. Sparrow Hawk (*Falco sparverius*), and four specimens of Evening Grosbeak (*Hesperiphona vespertina*), New Jersey.

MISS HELEN LOUISE COATES. Great Horned Owl (*Bubo virginianus*).

CHAS. FEARON. Cardinal Grosbeak (*Cardinalis cardinalis*).

T. HAMSON GIBSON. Horned Grebe (*Colymbus auritus*), Wildwood, N. J.

MUD HOLE GUN CLUB. Shoveller Duck (*Spatula clypeata*), New Jersey.

W. M. PACK. Yellow Rail (*Coturnicops novaboracensis*), Pennsylvania.

MRS. CHAS. J. PENNOCK. C. J. Pennock Collection of bird skins and eggs. MISS TOWN. Small collection of birds' eggs.

DR. H. R. WHARTON. Snow Bunting (*Plectrophenax nivalis*) and Mallard (*Anas platyrhynchos*), Salem, New Jersey.

ARCHICLAUS P. WILLETS. Screech Owl (*Megascops asio*) and Red-winged Blackbird (*Agelaius phoeniceus*), New Jersey.

E. W. WOOLMAN. American Bittern (*Botaurus lentiginosus*), Philadelphia.

MRS. SAMUEL WRIGHT. Collection of local bird skins, made by the late Samuel Wright.

ZOOLOGICAL SOCIETY OF PHILADELPHIA. Specimens prepared in the following manner: Mounted: Condor (*Sarcorhamphus gryphus*). Skins: Black-footed Penguin (*Spheniscus demersus*), Goliath Heron (*Ardea goliath*), Stanley Crane (*Tetrapteryx paradisea*), Helmeted Guinea-fowl (*Numida coronata*), Chattering Lory (*Lorius garrulus*), Blue-orbited Passerine Parakeet (*Psittacula conspicillata*), White-crowned Turacou (*Turacus leucolophus*), Great Barbet (*Megalæma virens*), Great Bird of Paradise (*Paradisea apoda*), Painted Bunting (*Passerina ledaucherii*), Tanager (*Schistochlamys capistratus*). Skull and Sternum: Wedge-tailed Eagle (*Aquila audax*).

BY PURCHASE. Three hundred specimens of Colombian Birds. Ninety-two specimens of Hummingbirds.

DELAWARE VALLEY ORNITHOLOGICAL CLUB. Six nests and eggs of Pennsylvania and New Jersey birds and four mounted birds.

REPTILES AND AMPHIBIANS.

ARTHUR A. BAUR. Portion of skin of Alligator (*Alligator* sp?), Guayaquil, Ecuador.

JACK DORSETT. Jar of reptiles and amphibians, North Carolina.

PHILIP LAURENT. Skink (*Eumeces* sp.), Florida.

BAYARD LONG. *Hyla pitcheringii*, New Jersey.

E. S. and W. I. MATTERN and H. W. FOWLER. Collection of amphibians, Pennsylvania.

S. N. RHOADS. Collection of reptiles and amphibians, Wilmington, N. C.

A. F. SATTERTHWAIT. Four Cricket Frogs (*Acris gryllus*), Charleston, Missouri. Three Frogs, near Charleston, Missouri.

DR. WITMER STONE. Collection of reptiles and amphibians, South Carolina. Collection of amphibians, New Jersey. Several reptiles and amphibians, California and Arizona.

J. F. STREET. Virginia Snake (*Virginia valeriae*), Virginia.

PURCHASED. Collection of reptiles and amphibians obtained by D. E. Harrower in Panama.

FISHES.

R. M. ABBOTT. Bottle of small fishes, South River, Maryland.

H H. BURTON and H. W. FOWLER. Jar of fishes, Pennsylvania.

MESSRS. CORMAN and LIPSCHELTZ. Thread Mackerel (*Blepharis crinitus*), New Jersey.

H. W. FOWLER. Collection of fishes, Virginia.

J. H. FERRISS. Eggs of darter, Illinois.

DR. W. E. HUGHES. Two Brook Trout (*Salvelinus fontinalis*), Maine.

W. T. INNES. Jar of aquarium fishes.

F. J. KEELEY. Blenny, Florida.

WALTER I. MATTERN. Blue Sunfish (*Lepomis incisor*), Pennsylvania. Jar of fishes, Maryland.

E. S. and W. I. MATTERN. Three collections of fishes, Pennsylvania.

E. S. and W. I. MATTERN and H. W. FOWLER. Collection of fishes, Pennsylvania and New Jersey.

W. L. PAULIN. *Pterophyllum scalare*, raised in Philadelphia.

HARTIE I. PHILLIPS. Dolphin (*Coryphana hippurus*), New Jersey.

DR. R. J. PHILLIPS. Red Mullet (*Upeneus*), New Jersey.

CHARLES T. RAMSDEN. Young *Heros tetracanthus*, Cuba.

S. N. RHOADS. Jar of spawning brook lampreys (*Entosphenus aphypterus*), New Jersey.

DR. WITMER STONE. Collection of fishes, South Carolina.

H. E. THOMPSON and H. W. FOWLER. Three jars of fishes, Pennsylvania.

R. W. WEHRLE. Six jars of fishes, Pennsylvania.

RECENT MOLLUSCA.

DR. W. L. ABBOTT. *Eurycratera dilatata* Pfr., near Porte de Paix, Haiti.

JACOB AEBLY. Five trays of shells, New Jersey and Italy.

BENJAMIN ALBERTSON. *Trivia europaea* Mont., England.

CHARLES H. BAKER. Nine species of shells, Florida and Massachusetts.

F. C. BAKER. Six trays of shells, Oneida Lake, N. Y.

DR. FRED BAKER. *Alvania oldroydæ* Bart., S. Coronado Is., L. Cal.

DR. P. BARTSCH. Two varieties of *Amphidromus maculiferus* Sby., Mindanao.

S. S. BERRY. Thirty-six trays of shells, West America and Cuba.

DR. A. P. BROWN. Four trays of shells, Antigua.

PROF. W. A. and E. L. BRYAN. Eight species of shells, Hawaiian Islands.

H. C. BURNUP. Three species of *Truncatellina*, S. Africa.

DR. P. P. CALVERT. *Unio complanatus* Sol., Meredethtown, N. H.

GEORGE W. CARPENTER. One pearl.

E. P. CHACE. Five trays of shells, California.

C. E. CLAGHORN. *Harpa major* Bolten.

GEORGE H. CLAPP. Three species of shells, Alabama and Jamaica.

W. F. CLAPP. Six species of land shells, Peru.

T. D. A. COCKERELL. The type of *Polygyra texasiana tillandisa* Ckll., Texas.

C. M. COOKE. Seven trays of Hawaiian land shells.

DELOS E. CULVER. Five species of marine shells, Virginia.

J. FARQUHAR. Twelve species of African land shells.

J. H. FERRISS. Two hundred and forty-two trays of shells, western America.

J. H. FERRISS and L. E. DANIELS. Sixty-two trays of shells, western America.

H. W. FOWLER. Twenty-one trays of shells, eastern America.

FRANKLIN INSTITUTE. (Deposited.) *Malleus albus* Lam.

LORRAINE S. FRIERSON. Four *Unios*, U. S. and Guatemala.

S. G. GORDON. Twenty-seven trays of shells, eastern America.

GEORGE M. GREENE. Two trays of shells, Virginia.

D. E. HARROWER. (Purchased.) One hundred and thirteen trays of shells, Panama.

MORGAN HEBARD. Eighteen trays of shells, Florida and Cuba.

ADAM HECHLER. *Crepidula aeuleata* Gm., from a sponge.

CHAS. HEDLEY. Sixteen trays of Australian land shells.

JUNIUS HENDERSON. Nineteen trays of shells, Colorado and Wyoming.

A. A. HINKLEY. Seven trays of shells, Arkansas and Mexico.

H. VON IHERING. Two land shells, South America.

ARTHUR JACOT. Twenty-two trays of shells, North Carolina and New York.

C. W. JOHNSON. *Viviparus malleatus* Rve., near Boston, Massachusetts.

F. J. KEELEY. *Ovula uniplicata* Sby., Hawks Park, Florida.

PHILIP LAURENT. Three trays of shells, Florida.

MRS. A. L. LETSON. The type of *Odostomia letsonae* Pils., Oahu.

BAYARD LONG. Forty-five trays of shells, America.

J. G. MALONE. Six species of shells, Oregon.

E. S. MATTERN and H. W. FOWLER. Eight trays of shells, New Jersey and Pennsylvania.

E. S. and W. I. MATTERN. Ten trays of shells, New Jersey, Pennsylvania and Florida.

E. H. MATTHEWS. Two Australian marine shells.

W. G. MAZYCK. Six trays of Bullaria.

D. N. McCADDEN. Three trays of shells, Maryland and New Jersey.

R. E. B. MCKENNEY. *Veronicella*, Panama.

MRS. I. S. OLDRYD. Three trays of California shells.

FREE OTTEMILLER. Fifteen trays of shells, Pennsylvania and Florida.

W. H. OVER. Thirty-five trays of shells, South Dakota.

DR. R. J. PHILLIPS. Squid eggs, New Jersey.

MISS R. M. PIERCE. Two marine shells, New Jersey.

DR. H. H. PILSBRY. Seven hundred and seventy-two trays of shells, Hawaiian Islands, Cuba and United States. Two hundred and twenty-two trays of shells, New Mexico.

PRINCETON UNIVERSITY. Two chitons, Porto Rico.

CHARLES T. RAMSDEN. Sixteen trays of Cuban shells.

RUSSELL C. ROSENFELT. *Pisidium streatorii* St., S. Worthington, Massachusetts.

A. F. SATTERTHWAIT. Thirteen trays of shells, Arkansas and Missouri.

DR. H. SKINNER. *Ceratodiscus ramsdeni* Pils., near Guantanamo, Cuba.

H. H. SMITH. One hundred and seventy-two trays of shells, Alabama and Tennessee.

MAXWELL SMITH. Thirty trays of land shells, Europe and Colorado.

G. W. H. SOELNER. *Veronicella cubensis* Pfr., Isle of Pines, Cuba.

SOWERBY and FULTON. (Purchased.) One hundred and ninety-three trays of shells.

IRWIN SPALDING. One *Pterodiscus*, Oahu.

DR. WITMER STONE. Two species of shells, New Jersey and North Carolina.

D. THAANUM. One hundred and fifty-two trays of Hawaiian marine shells.

MRS. L. D. THOMPSON. Sixteen trays of New England shells.

W. TOLLERY. Five species of marine shells, England.

H. TRUDELL and S. G. GORDON. Four land shells, North Carolina.

E. G. VANATTA. *Planorbis cornutus rubra* Bs., from an aquarium in Philadelphia, Pa.

BRYANT WALKER. Five trays of west American shells. A specimen of *Holospira bartschi*.

E. M. WALKER. *Arion circumscriptus* Jh., Toronto, Canada.

B. WALKER and H. F. WILSON. Two land shells, Wisconsin.

MISS H. N. WARDLE. Seven species of land shells, Pike County, Pennsylvania.

R. H. WEHRLE. Two trays of *Sphaerium*, Indiana County, Pennsylvania.

JOSEPH WILLCOX. Two marine shells, Peru.

H. W. WENZEL. *Polygyra abolabris* Say, Southern Pines, N. Carolina.

GEORGE WILLETT. *Ischnochiton willetti* Perry, Forrester Island, Alaska.

MISS HELEN WINCHESTER. Two trays of shells, New Jersey.

INSECTS.

W. L. ABBOTT. One hundred and nineteen insects, Hayti; twenty insects, Tortuga.

JACOB AEBLY. Seven insects, Pennsylvania.

AMERICAN MUSEUM OF NATURAL HISTORY. Fifty-two Dermaptera, West Indies, Mexico, British Guiana; eight Lepidoptera, United States.

ANASTASIO ALFARO. One hundred and seven Orthoptera, Costa Rica.

F. E. BLAISDELL. *Omus cupreonitens* (Paratypes), California. Eight *Eleodes*, California.

J. G. BONNIWELL. Thirty-one Lepidoptera, Florida.

A. F. BRAUN. Thirty-two *Nepticula*, United States; thirty-four *Lithocolletes*, United States.

H. H. BREHME. Six moths, United States.

MALCOLM BURR. One hundred and twenty-nine Orthoptera, Brazil.

P. P. CALVERT. Nine insects, Mt. Lake, Virginia.

D. M. CASTLE. Five Blattidae, Florida.

T. D. A. COCKERELL. Eight Orthoptera, Mississippi; New York.

CORNELL UNIVERSITY. Eight Dermaptera, New York; Mississippi. *Phlugiola redenbacheri*, Brazil.

ERICH DAECKE. Four *Ceuthophilus*, Pennsylvania.

W. T. DAVIS. Six Homoptera, Arizona, New Mexico.

MISS K. DIXON. One moth, Pennsylvania.

H. C. FALL. Seven types of Malachidae, United States.

J. H. FERRIS. Caddis fly nests, California.

HENRY FOX. One hundred and one Orthoptera, Virginia; ten Orthoptera, Indiana.

W. J. FOX. Two insects, Philadelphia.

C. W. FROST. Three beetles, Philadelphia.

E. H. GIBSON. One hundred and thirty-five Hemiptera.

W. H. GITHENS. One Orthopteron.

C. B. GOODERHAM. Twenty-nine Orthoptera, Nova Scotia.

MRS. F. I. GOWEN. One beetle, Philadelphia.

G. M. GREENE. Four Coleoptera, United States.

S. G. GORDON. Seven Orthoptera; one *Cychrus*, North Carolina.

FORDYCE GRINNELL, JR. Fifty-seven Orthoptera, California.

O. A. JOHANNSEN. Eleven Anthomyidae, United States.

HENRY KRAEMER. Illustrations of early stages of *Coccus cacti*.

BAYARD LONG. Collection of insects from New Jersey; one beetle, Canada.

D. E. HARROWER. Twenty-three insects, Canal Zone, Panama.

MORGAN HEBARD. Fifty-nine Orthoptera, United States, Central and South America. One hundred and seven Dermaptera, Arizona, Mexico and Jamaica.

One hundred and eight Orthoptera, Mexico and Central America. Eighty-five Orthoptera, Mexico. Twenty-three Orthoptera, Costa Rica. Seven insects, United States; seven insects, Georgia. Thirty-seven insects, seven Arachnida, five Myriopoda, Africa. Ten Orthoptera, Arizona. Ninety-seven earwigs, Jamaica and Mexico. Three butterflies, Florida. Thirty-four Coleoptera, United States.

J. C. HUGENIN. Eight butterflies, California.

E. P. HEWLETT. Ten moths, California.

C. H. LANKESTER. Fifty-seven Orthoptera, Costa Rica.

PHILIP LAURENT. Fifteen Orthoptera, Florida; one Orthopteron, New Jersey; eighteen Lepidoptera, Pennsylvania and New Jersey.

LELAND STANFORD UNIVERSITY. Seventy-eight Gryllidae, Brazil.

R. A. LEUSSLER. Sixty-seven Lepidoptera, Nebraska.

J. E. MASON. Ten *Cecropia* cocoons, Philadelphia.

L. W. MENGEL. Eleven *Argynnis*, Idaho; one *Heliconius urania*, British Guiana.

C. E. MITCHEL. Twenty-one Hymenoptera, North America.

MUSEUM OF COMPARATIVE ZOOLOGY. One paratype of *Pseudisolabis elegans* Hebard, India.

ROBERT K. NABOURS. Series of fifty-six *Paratettix texanus* illustrating the genetic studies of the donor.

R. OTTOLENGUI. Eleven *Pamphila*, California.

H. A. PILSBRY. One Acridid, New Mexico.

PURCHASED. Two hundred and seventy-nine Orthoptera, Madagascar.

R. F. PARKER. Four Sarcophidae, United States.

W. D. ROBINSON. One Odonat, Philadelphia.

A. F. SATTERTHWAIT. Several insects, Charleston, Missouri.

HENRY SKINNER. Ten Lepidoptera, California; thirty-eight insects, Wayne County, Pennsylvania.

WITMER STONE. Five hundred Orthoptera, New Jersey; thirty-seven Orthoptera, South Carolina; eleven insects, Maryland.

A. F. SWAIN. Eleven slides of Aphididae, California.

UNITED STATES NATIONAL MUSEUM. Thirty-nine Orthoptera, Brazil and Mexico; thirteen Dermaptera, Panama.

H. B. WEISS. Two Hymenoptera, New Jersey.

P. W. WHITING. Ninety-one Orthoptera, Pennsylvania and New England.

R. C. WILLIAMS, JR. Forty-one slides genitalia of *Thanaos*; fifty-five moths and butterflies, United States.

WISCONSIN EXPERIMENT STATION. Seventeen Orthoptera, Wisconsin.

HENRY WORMSBACHER. Three Lepidoptera, Ohio.

INVERTEBRATES.

(Other than Insects and Mollusks.)

ACADEMY EXPEDITION TO HAWAIIAN ISLANDS. Four crustaceans, six corals, Hawaiian Islands.

G. W. CARPENTER. Two specimens of red coral.

H. W. FOWLER. Collection of crustaceans and spiders, Virginia.

W. J. FOX. One isopod, New Jersey.

FREE MUSEUM OF SCIENCE AND ART. One *Coronula regina* Darwin.

D. E. HARROWER. *Polypus*, Colon, Panama.

ADAM HECHLER. Coral from sponge.

F. J. KEELEY. Isopod from tail of Silver Whiting.

CHAS. LAWALL. Two bottles of shrimps (*Crago septemspinosa*), New Jersey.

DR. H. A. PILSBRY. Hermit Crab, La Jolla, California. Fourteen specimens from Hawaiian Islands.

PURCHASED. One hundred and fifteen trays of invertebrates. Pacific Ocean beach, Panama.

A. F. SATTERTHWAIT. One vial of leeches and one earthworm, near Charleston, Missouri.

DR. WITMER STONE. Collection of crayfishes, South Carolina. Collection of crabs, New Jersey.

D. THAANUM. Three barnacles, one lot of coral and one lot of brachiopods, Hawaiian Islands.

U. S. NATIONAL MUSEUM. *Coronula diadema* L., and *Conchoderma aurita* L., from the lip of a whale from Newfoundland.

C. M. WHEATLEY COLLECTION (Deposited). Two gorgonians.

JOSEPH WILLCOX. Two trays invertebrates from Peru.

INVERTEBRATE FOSSILS.

ACADEMY EXPEDITION TO HAWAIIAN ISLANDS. Four fossils, Hawaiian Islands.

DELOS E. CULVER. Six Miocene fossil shells, Buckroe Beach, Va.

DR. JOHN EVANS. Three trays of fossil *Arca*, Chiriqui, Panama.

H. W. FOWLER. Seven trays of fossils, Maryland and Pennsylvania.

BAYARD LONG. Collection of fossil shells, New Jersey.

DR. J. P. MOORE. Two fossils, Texas and Utah.

H. A. PILSBRY. Six trays of fossils, New Mexico and Hawaiian Islands.

LLOYD B. SMITH. Forty-seven trays of fossils, Cenizas, Colombia. Ten trays of fossils, Haiti.

D. THAANUM. *Ostrea retusa* Pease, Oahu, H. I.

H. VENDREYS. Two trays of fossils, Jamaica.

BRYANT WALKER. Six trays of Pliocene fossils, California.

W. W. WEBSTER. *Arca chiriquensis* Gabb (fossil), Haiti.

JOS. WILLCOX. Four fossil shells, Peru.

MINERALS.

ALFRED C. BATES. Flint geode in chalk, England.

MORRELL G. BIERNBAUM. Xanthosiderite, Lake Superior.

ARTHUR BRATT. Fragments of minerals.

CLARK HILL. Concretion, Ohio.

CHAS. W. HOADLEY. Specimen of Datolite, Paterson, New Jersey.

JOHN HOLZMAN. Diabantite, Prehnite, Laumontite, Thaumasite. Paterson, New Jersey.

HENRY M. KOLB. Collection of Lake Superior minerals.

JOHN H. MCFADDEN. Geological specimens, Shackleton Antarctic Expedition.

V. W. FIELD. Mimetite, Willemite, Utah.

SAMUEL G. GORDON. Molybdenite, Sussex Co., N. J.; Baddeleyite, Brazil; Cuprite, Hematite, Piedmontite, South Mountain, Adams Co., Pa.; Siderite, Argentine, Laumontite, Stilbite, Ward's Quarry, Delaware Co., Pa.; Quartz (a sixty pound crystal) Rollandville, Philadelphia; Pyrrhotite, Lansdowne, Pa.; Genthite, Actinolite, Gladwyn, Pa. Asbestos, Easton, Pa.; Cacoxenite, Hellertown, Pa.; Stevensite (6 specimens), Pectolite, Gothite, Analcite, Thaumasite, Gypsum, Mesolite, Datolite, Anhydrite, Paterson, N. J.; Sphalerite, Philadelphia; Specular Hematite, Phoenixville, Pa.; Quartz, Phoenixville, Pa.; Crocidolite, Philadelphia; Argentine, Amelia C. H., Va.; Zoisite, Calcite, Stilpnomelane, Falls of French Creek, Pa.; collection of volcanic rocks from Sussex Co., N. J.; four Pennsylvania and New Jersey geological specimens, illustrating slickensides, and dikes.

WILLIAM MADDRENS. Specimen of Calcite, Sphalerite and Pyrite, Pennsylvania.

R. A. MERCER. Babingtonite, New Jersey.

DR. S. W. MORTON. Collection of minerals.

FREDERICK OLDACH. Specimen of Rutile and Beraumite, Pennsylvania.

FREDERICK OLDACH and S. G. GORDON. Quartz, Rolandville, Pa.

HARRY WARFORD. A specific gravity balance, Epidote and Barite, Pennsylvania.

HARRY WARFORD and S. G. GORDON. Ilmenite, Pennsylvania.

H. L. WILLIG. Four crystals of Limonite pseudomorph after Pyrite, Pennsylvania.

PLANTS.

W. M. BENNER. Sixteen sheets of local plants.

DR. GEORGE N. BEST. Collection of New Jersey and Pennsylvania plants.

BOTANICAL SECTION. Ten hundred and thirty-seven sheets New England plants.

O. H. BROWN. Fifty-three local plants.

HARLAN S. GATCHELL. Herbarium of the late Joel J. Carter.

BAYARD LONG. Nine sheets of local plants.

BAYARD LONG and HAROLD ST. JOHN. One hundred and five sheets of local plants.

W. H. LEIBELSPERGER. Thirty-six sheets of local plants.

ARTHUR LEEDS. Specimen of *Arctostaphylos*.

C. S. MANN. Specimen of Bartram Oak.

ST. LOUIS BOTANICAL GARDEN. Eight hundred and eighty-two sheets from the Mississippi Valley. (In exchange).

J. P. OTIS. Twenty-seven sheets of local plants.

H. W. PRETZ. Four hundred and seven sheets of local plants.

S. S. VAN PELT. Four local specimens.

U. S. NATIONAL HERBARIUM. Three hundred and fifteen sheets, mainly from the Canary Islands.

PERCY WILSON, through BAYARD LONG. Thirty-seven sheets of local plants.

F. W. PENNELL and BAYARD LONG. Fourteen sheets of local plants.

ARCHEOLOGY, ETC.

CHARLES BARTON. Head of an Egyptian king, Thebes.

EDWARD H. BURR. Collection of Indian axes, spearheads, etc.

ELLWOOD C. ERDIS. Obsidian points, and potsherds from surface and ruins in the Apache National Forest, Arizona.

E. S. GINNANE. Potsherd and Indian artifacts of iron ore, Blount County, Alabama.

FRANK J. KEELEY. Fragment of heavy glass vessel from an Indian mound, Hawks Park, Volusia County, Florida.

CLARENCE B. MOORE. Additions to the C. B. Moore collection from burial mounds and cemetery sites along the lower Mississippi, and in southern Alabama and Georgia, and north-west Florida.

ESTATE OF BENJAMIN SHARP. Collection of Eskimo ethnographica, including bows, arrows and quiver, drills and bow, cord drills, seal club, knives, needles, carving tools, snow-knives, toy lamp and dish, child's skin shoes, sealskin boot, skin cup and vessel, bucket handle, toggles, etc.



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